

REMARKS

Claims 1-24 are pending in this application.

The Office Action has rejected claims 1-24. Applicants request that the Examiner reconsider claims 1-24 based on the following remarks and arguments.

I. Claim Rejections – 35 USC § 103(a) – *Murray et al. in view of Enomoto et al.*
Claims 7-21

Claims 7-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,854,784 to Murray et al. (“Murray”) in view of U.S. Pat. No. 6,685,539 to Enomoto et al (“Enomoto”). The Office Action argues that it would have been obvious to a skilled artisan to provide the cutting tool of Murray with abrasive grains made of silica having a primary average grain size of between 0.8 nm to 10 µm, as disclosed by Enomoto.

Applicants respectfully disagree. As discussed in the last response, Murray is directed to a metal-cutting insert.

Enomoto discloses a processing tool that uses silica abrasive grains to obtain a specific mechano-chemical reaction with silicon (C2/L62-65). The mechano-chemical reaction is necessary to “realize a high removing efficiency while maintaining a high quality of the processed surface” (C3/L5-7). A processing tool that contains silica abrasive grains can be used for a fixed-abrasive grinding and polishing process on a surface of a silicon workpiece (C3/L19-21).

Applicants respectfully submit that a person having ordinary skill in the art would not look to art related to mechano-chemical reaction of silicon wafers, as disclosed by Enomoto, for a cutting tool insert or a machining tool used for turning, milling, and cutting a fiber cement workpiece (see application as-published, paragraph [0017]). A silicon wafer is a monolithic material composed of high purity silicon, and requires a high quality, high purity surface for use in electronic devices. Fiber cement is a composite of cement, silica sand, cellulose and a binder. The two materials have vastly differing material properties and respond entirely differently to machining processes. A person having ordinary skill in the art, who desires to design a cutting

tool insert or a machining tool for use in connection with machining fiber cement, as in Applicants' claims 7 and 14, would not be motivated to look to art for the grinding and polishing of a silicon wafer. Applicants maintain that it would truly be surprising to a person having ordinary skill in the art to come to the unlikely finding that a composite of fiber cement could be turned, milled, or cut using a tool insert or machining tool that had silica as the abrasive material, regardless of the silica particle size.

Based on the arguments presented above, Applicants respectfully submit that a person having ordinary skill in the art would not combine the cutting tool of Murray with the silica abrasive grains having a primary average grain size of between 0.8 nm to 10 μ m of Enomoto, to form a cutting tool insert or machining tool for machining fiber cement. Accordingly, Murray in combination with Enomoto fails to render any independent claim of the present application, including claims 7 and 14 obvious. Applicants respectfully request withdrawal of the rejection of independent claims 7 and 14.

Claims 8-13 and 15-21 depend from and add further limitations to independent claims 7 and 14, respectively, and encompass all of the limitations of independent claims 7 and 14. Accordingly, claims 8-13 and 15-21 are allowable for at least the same reasons in connection with independent claims 7 and 14, and Applicants respectfully request withdrawal of the rejections of claims 8-13 and 15-21.

II. Claim Rejections – 35 USC § 103(a) – *Fladgard et al. in views of Murray et al. and Enomoto et al.*

Claims 1-6 and 22-24

Claims 1-6, and 22-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,102,026 to Fladgard et al. ("Fladgard") in views of Murray and Enomoto.

Applicants respectfully disagree. Fladgard does not disclose machining fiber cement to generate chips out of the workpiece, as in Applicants' claims 1 and 22. Fladgard fails to disclose a method for cutting fiber cement that uses either a cutting tool insert or a specific superabrasive grain size in a machining tool. Fladgard merely discloses a method for cutting

fiber cement by imparting a tensile stress on one side of a workpiece, forming an indentation, and propagating a crack along a cutting plane through the workpiece (claim 1). In addition, based on all of the arguments presented hereinabove, a person having ordinary skill in the art would not combine Murray with Enomoto to develop methodology for machining fiber cement.

Applicants respectfully submit that Applicants' method for machining fiber cement, as in claims 1 and 22, and Enomoto's disclosed methods of grinding and polishing silicon wafers are completely different processes. Enomoto discloses a process to finish silicon wafers using a bonded abrasive tool, where silicon removal rates are on the order of $1 \text{ mm}^3/\text{min}$. Applicants' machining operations involve the use of a single point cutting tool. Applicants' machining removal rates are on the order of $100 \text{ mm}^3/\text{min}$.

The mechano-chemical method of grinding and polishing a silicon wafer disclosed by Enomoto includes controlled brittle fracture and a chemical reaction of the silica with the silicon wafer achieved by means of the bonded silica-abrasive tool. Applicants machine a material that is predominantly cellulose and cement, where the cutting action is due to intense shearing at the cutting zone.

Applicants' process, material properties, and material behaviors are strikingly different from those of Enomoto. A person having ordinary skill in the art would not look to Enomoto to machine fiber cement. Accordingly, the combination of Fladgard with Murray and Enomoto fails to teach all of the limitations of independent claims 1 and 22, and Applicants respectfully request the withdrawal of the Examiner's rejections of independent claims 1 and 22.

Claims 2-6 and 24, and 23 depend from and add further limitations to independent claims 1 and 22, respectively, and encompass all of the limitations of independent claims 1 and 22. Accordingly, claims 2-6, 23, and 24 are allowable for at least the same reasons in connection with independent claims 1 and 22, and Applicants respectfully request withdrawal of the Examiner's rejections of claims 2-6, 23, and 24.

CONCLUSION

Applicants and Applicants' representatives assert that the pending claims are in condition for allowance and respectfully request that this case be passed to issue. Should the Examiner have any questions or feel that a conversation with Applicants' representative would advance prosecution, he is encouraged to contact the undersigned at his convenience.

Although no fee is believed to be due for this submission, to the extent that fees may be required for this response, the Commissioner is hereby authorized to debit Deposit Account 50-0436.

Respectfully submitted,
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A handwritten signature in black ink, appearing to read "Gary A. Nitowski", written over the printed name.

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